

Operator Training

Impressed Current Cathodic Protection

D H E C



PROMOTE



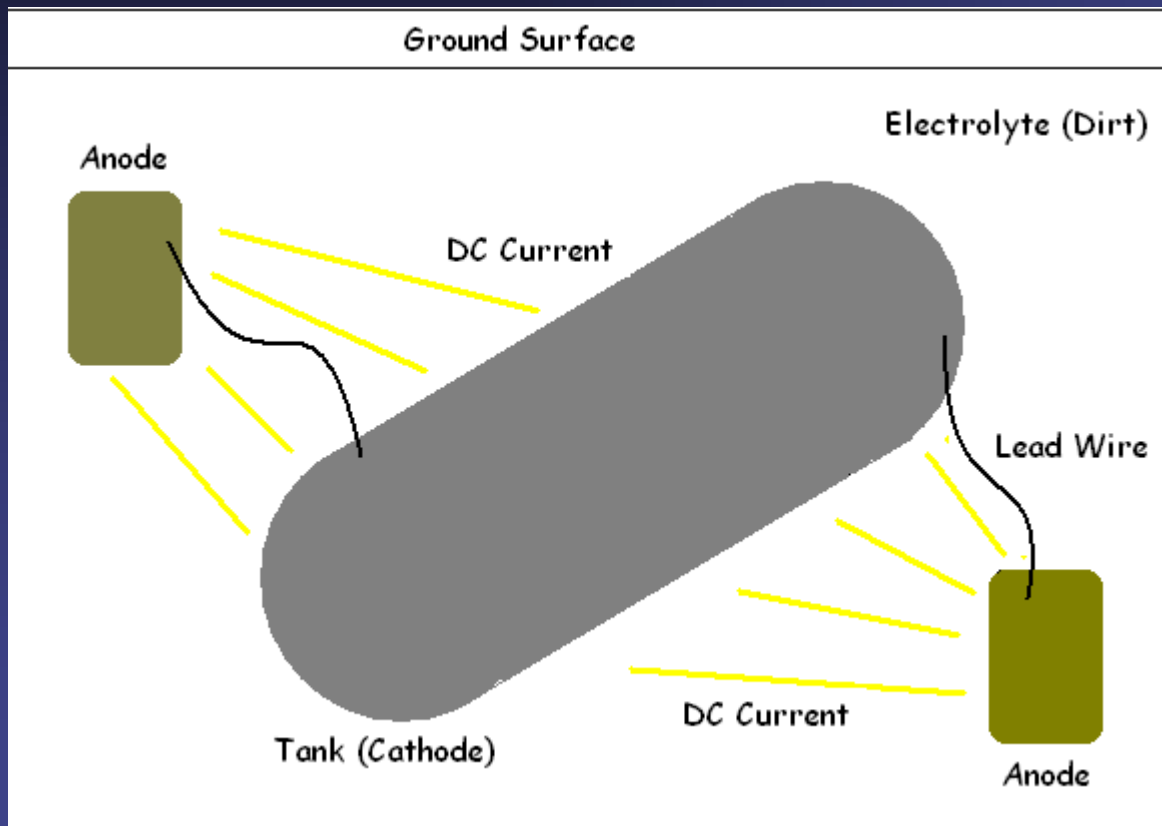
PROTECT



PROSPER

South Carolina Department of Health
and Environmental Control

Cathodic Protection



Components:

- Structure being protected (cathode)
- The anode(s) protecting the structure
- Environment
- Electric connection

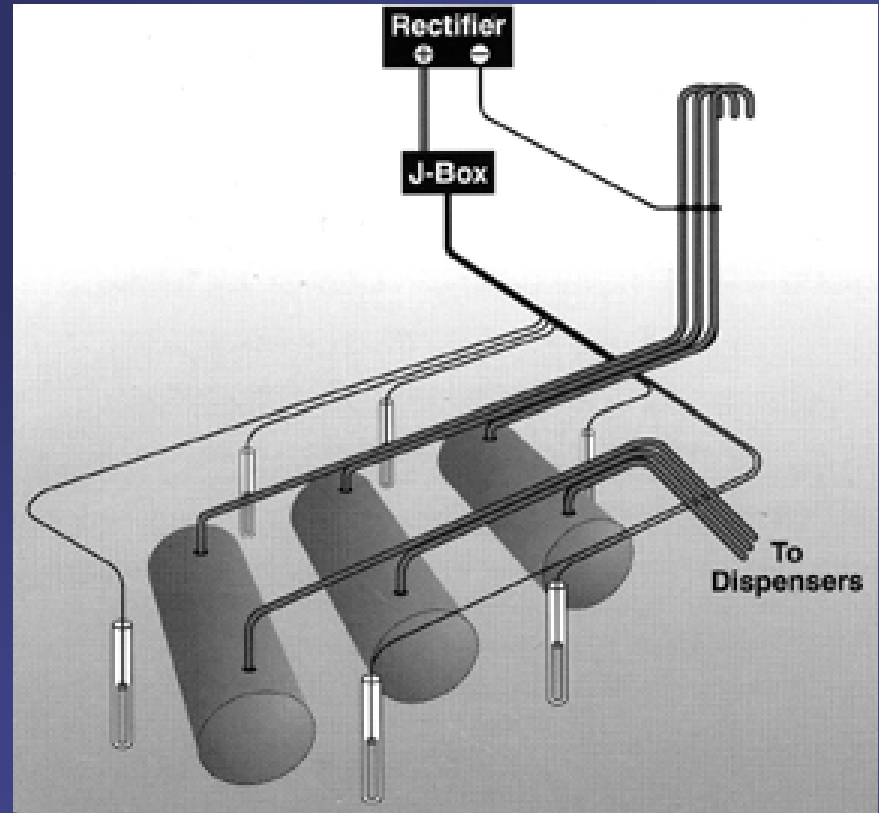
Impressed Current Cathodic Protection

Impressed current systems are generally installed on those tank systems that are older and do not have any form of protection (bare steel tanks and piping).



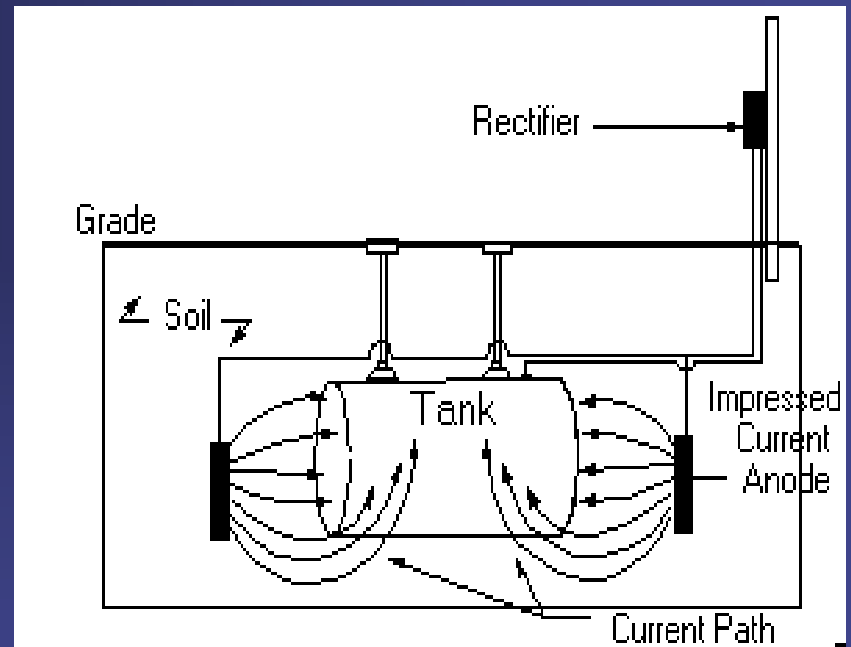
Impressed Current Cathodic Protection

Impressed Current cathodic protection uses an electrical circuit to provide corrosion protection. Anodes are installed around the tanks and/or piping. These anodes are attached to a rectifier and to the structure being protected.



Impressed Current Cathodic Protection

The rectifier uses commercial electrical power to activate the anodes. These activated anodes then send energy to the structure being protected. This energy is transmitted to the structures' surface to inhibit corrosion. The structure then sends energy back to the rectifier to complete the circuit. This circuit of energy takes away energy from the tank (or piping) which would usually cause corrosion.



Impressed Current - Rectifier



Electrical power to the rectifier must remain on at all times, otherwise the tanks/piping are not protected.

Impressed Current System



Every 60 days check that the rectifier is on and operating (volts and amps shown on the gauges). Record the information on the 60-Day Record of Rectifier Operations (shown). 6 months worth of readings (the most recent 3 inspections) are required to be on hand at all times.

[illegible]

Impressed Current System

Periodically inspect the cables that run across and around the tank field to make sure that none are exposed or broken (either condition should be repaired immediately).



Impressed Current Cathodic Protection

The cathodic protection system must be tested at least once every three years by a qualified cathodic protection tester.



Impressed Current Cathodic Protection

STATE OF SOUTH CAROLINA Print Form

IMPRESSIONED CURRENT CATHODIC PROTECTION SYSTEM EVALUATION

This form must be utilized to evaluate underground storage tank (UST) cathodic protection systems in South Carolina. Access to the soil directly over the cathodically protected structure that is being evaluated must be provided.
 > A site drawing depicting the UST cathodic protection system and all reference electrode placements must be completed.

I. UST OWNER		II. UST FACILITY	
NAME: _____	NAME: _____	ID # _____	
ADDRESS: _____	ADDRESS: _____		
CITY: _____	CITY: _____	COUNTY: _____	
III. CP TESTER		IV. CP TESTER'S QUALIFICATIONS	
TESTER'S NAME: _____	NACE INTERNATIONAL CERTIFICATION NUMBER: _____		
COMPANY NAME: _____	CERTIFICATION DATE: _____	TYPE OF CERTIFICATION: _____	
ADDRESS: _____	SOURCE OF CERTIFICATION: _____		
CITY: _____	OTHER (EXPLAIN): _____		
V. REASON SURVEY WAS CONDUCTED (mark only one)			
<input type="checkbox"/> Routine - 3 year <input type="checkbox"/> Routine - within 6 months of installation <input type="checkbox"/> 60-day re-survey after test <input type="checkbox"/> Re-survey after repair/modification Date next cathodic protection survey must be conducted: _____ (required within 6 months of installation/repair & every 3 years thereafter)			
VI. CATHODIC PROTECTION TESTER'S EVALUATION (mark only one)			
<input type="checkbox"/> PASS All protected structures at this facility pass the cathodic protection survey and it is judged that adequate cathodic protection has been provided to the UST system (indicate all criteria applicable by completion of Section VIII). <input type="checkbox"/> FAIL One or more protected structures at this facility fail the cathodic protection survey and it is judged that adequate cathodic protection has not been provided to the UST system (complete Section IX). <input type="checkbox"/> INCONCLUSIVE The cathodic protection survey of an impressed current system must be evaluated by a corrosion expert because one or more of the conditions listed in Section 7.1.5 of the SCDHEC cathodic protection guidance document are applicable (complete Section VII).			
TESTER'S SIGNATURE: _____		DATE CP SURVEY PERFORMED: _____	
VII. CORROSION EXPERT'S EVALUATION (mark only one)			
The survey must be conducted and/or evaluated by a corrosion expert when: a) supplemental anodes or other changes in the construction of the impressed current system are made; b) stray current may be affecting buried metallic structures; or c) an inconclusive result was indicated in Section VI.			
<input type="checkbox"/> PASS All protected structures at this facility pass the cathodic protection survey and it is judged that adequate cathodic protection has been provided to the UST system (indicate all criteria applicable by completion of Section VIII). <input type="checkbox"/> FAIL One or more protected structures at this facility fail the cathodic protection survey and it is judged that adequate cathodic protection has not been provided to the UST system (indicate what action is necessary by completion of Section IX).			
CORROSION EXPERT'S NAME: _____		COMPANY NAME: _____	
NACE INTERNATIONAL CERTIFICATION: _____		NACE INTERNATIONAL CERTIFICATION NUMBER: _____	
CORROSION EXPERT'S SIGNATURE: _____		DATE: _____	
VIII. CRITERIA APPLICABLE TO EVALUATION (mark all that apply)			
<input type="checkbox"/> 850 OFF Structure-to-soil potential more negative than -850 mV with respect to a Cu/CuSO ₄ reference electrode with protective current temporarily interrupted (instant-off). <input type="checkbox"/> 100 mV POLARIZATION Structure(s) exhibit at least 100 mV of cathodic polarization.			
IX. ACTION REQUIRED AS A RESULT OF THIS EVALUATION (mark only one)			
<input type="checkbox"/> NONE Cathodic protection is adequate. No further action is necessary at this time. Test again by no later than (see Section V). <input type="checkbox"/> RETEST Cathodic protection may not be adequate. Retest during the next 60 days to determine if passing results can be achieved. <input type="checkbox"/> REPAIR & RETEST Cathodic protection is not adequate. Repair/modification is necessary as soon as practical but within the next 60 days.			

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 FACSIMILE (803) 896-6245 www.scdhep.net
 DHEC 2511 (07/2002) SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL

- Test results must be on SC form (shown here)
- Keep two most recent tests on file at all times
- If test or part of the test fails, notify the Division immediately

Impressed Current Cathodic Protection



- If the test or part of the test fails, the system must be repaired within 30 days
- After the system is repaired, it must be retested within 6 months